

We Claim:

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1 1. A method for operation of a workflow system for processing an object by  
2 executing a plurality of tasks, each of said tasks having an associated enabling condition  
3 indicating whether the task is to be executed for said object, and wherein execution of at  
4 least one of said tasks results in the initiation of a side-effect action performed by a  
5 component external to said workflow system, said method comprising the step of:  
6 determining whether a task is to be eagerly executed based at least in part on the  
7 evaluation of enabling conditions and whether execution of the task results in the  
8 initiation of a side-effect action.

1 2. The method of claim 1 further comprising the step of:  
2 determining that a particular task whose execution results in the initiation of a  
3 side-effect action is eligible for eager execution only if it is determined that the enabling  
4 condition associated with the particular task will evaluate to true.

1 3. The method of claim 1 further comprising the step of:  
2 determining that a particular task whose execution does not result in the initiation  
3 of a side-effect action is eligible for eager execution prior to determining that the  
4 enabling condition associated with the particular task will evaluate to true.

1 4. The method of claim 1 wherein said step of determining whether a task is to be  
2 eagerly executed further comprises the step of:  
3 partially evaluating said enabling conditions.

1 5. The method of claim 1 wherein said step of determining whether a task is to be  
2 eagerly executed is further based on whether the task contributes to the production of a  
3 target value.

1 6. The method of claim 1 further comprising the step of:  
2 determining that a particular task is unneeded for processing of the object based at  
3 least in part on partial evaluation of an enabling condition of a task which depends on  
4 output of said particular task.

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1 7. The method of claim 1 further comprising the step of:  
2 determining that a particular task is necessary for processing of the object based at  
3 least in part on the evaluation of enabling conditions of tasks that depend on said  
4 particular task.

1 8. The method of claim 1 further comprising the step of:  
2 determining that a particular task is necessary for processing of the object based at  
3 least in part on the evaluation of enabling conditions that depend on the output of said  
4 particular task.

1 9. The method of claim 1 wherein said step of determining is performed  
2 repeatedly during the processing of the object.

1 10. The method of claim 1 wherein a memory of said workflow system stores a  
2 graph representing data flow dependencies and enabling flow dependencies between  
3 tasks and enabling conditions, said method further comprising the step of:  
4 propagating changes through said graph based on new outputs of completed tasks.

1 11. The method of claim 10 wherein said step of propagating changes is based on  
2 predefined propagation rules.

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1 12. A workflow system for processing an object by executing a plurality of tasks,  
2 each of said tasks having an associated enabling condition indicating whether the task is  
3 to be executed for said the object, and wherein execution of at least one of said tasks  
4 results in the initiation of a side-effect action performed by a component external to said  
5 workflow system, said system comprising:  
6 means for determining whether a task is to be eagerly executed based at least in  
7 part on the evaluation of enabling conditions and whether execution of the task results in  
8 the initiation of a side-effect action.

1 13. The workflow system of claim 12 further comprising:  
2 means for determining that a particular task whose execution results in the initiation of a  
3 side-effect action is eligible for eager execution only if it is determined that the enabling  
4 condition associated with the particular task will evaluate to true.

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1 14. The workflow system of claim 12 further comprising:  
2 means for determining that a particular task whose execution does not result in the  
3 initiation of a side-effect action is eligible for eager execution prior to determining that  
4 the enabling condition associated with the particular task will evaluate to true.

1 15. The workflow system of claim 12 wherein said means for determining  
2 whether a task is to be eagerly executed further comprises:  
3 means for partially evaluating said enabling conditions.

1 16. The workflow system of claim 12 wherein said means for determining  
2 whether a task is to be eagerly executed further comprises:  
3 means for determining whether the task contributes to the production of a target  
4 value.

1 17. The workflow system of claim 12 further comprising:  
2 means for determining that a particular task is unneeded for processing of the  
3 object based at least in part on partial evaluation of an enabling condition of a task which  
4 depends on output of said particular task.

1 18. The workflow system of claim 12 further comprising:  
2 means for determining that a particular task is necessary for processing of the  
3 object based at least in part on the evaluation of enabling conditions of tasks that depend  
4 on said particular task.

1 19. The workflow system of claim 12 further comprising:  
2 means for determining that a particular task is necessary for processing of the  
3 object based at least in part on the evaluation of enabling conditions that depend on the  
4 output of said particular task.

1 20. The workflow system of claim 12 further comprising:  
2 a memory for storing a graph representing data flow dependencies and enabling  
3 flow dependencies between tasks and enabling conditions; and  
4 means for propagating changes through said graph based on new outputs of  
5 completed tasks.

1           21. The workflow system of claim 20 wherein said memory stores predefined  
2 propagation rules and wherein said means for propagating changes further comprises  
3 means for propagating changes based on said predefined propagation rules.

1           22. A workflow system for processing an object, said system comprising:  
2 a plurality of tasks;  
3 a plurality of enabling conditions, each associated with one of said tasks and  
4 indicating whether its associated task is to be executed for said object;  
5 an execution engine for executing said tasks, wherein execution of at least one of  
6 said tasks results in the initiation of a side-effect action performed by a component  
7 external to said workflow system;  
8 a candidate task pool for storing tasks which are candidates for eager execution;  
9 and  
10 a prequalifier configured for maintaining said candidate task pool and for  
11 determining whether a task is to be eagerly executed based at least in part on the  
12 evaluation of enabling conditions and whether execution of the task results in the  
13 initiation of a side-effect action.

1           23. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining that a particular task whose execution results in the initiation  
3 of a side-effect action is eligible for eager execution only if it determined that the  
4 enabling condition associated with the particular task will evaluate to true.

1           24. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining that a particular task whose execution does not result in the  
3 initiation of a side-effect action is eligible for eager execution prior to determining that  
4 the enabling condition associated with the particular task will evaluate to true.

1           25. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining whether a task is to be eagerly executed by partially  
3 evaluating said enabling conditions.

1           26. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining whether a task is to be eagerly executed based on whether the  
3 task contributes to the production of a target value.

1           27. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining that a particular task is unneeded for processing of the object  
3 based at least in part on partial evaluation of an enabling condition of a task which  
4 depends on output of said particular task.

1           28. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining that a particular task is necessary for processing of the object  
3 based at least in part on the evaluation of enabling conditions of tasks that depend on said  
4 particular task.

1           29. The workflow system of claim 22 wherein said prequalifier is further  
2 configured for determining that a particular task is necessary for processing of the object  
3 based at least in part on the evaluation of enabling conditions that depend on the output of  
4 said particular task.

1           30. The workflow system of claim 22 further comprising a stored graph  
2 representing data flow dependencies and enabling flow dependencies between tasks and  
3 enabling conditions, wherein said prequalifier is further configured for propagating  
4 changes through said graph based on new outputs of completed tasks.

1           31. The workflow system of claim 30 further comprising stored predefined  
2 propagation rules wherein said prequalifier is further configured for propagating changes  
3 through said graph by applying said propagation rules.